

CLAIMS

What is claimed is:

1. A multistage switch to which a logical link couples a destination, the logical link comprising a plurality of physical links, the multistage switch comprising:
 - 5 a plurality of external ports, each physical link coupled to one of the plurality of external ports; and
 - a matrix of coupled switch devices, a frame received for the destination being forwarded through at least one of the switch devices to one of the physical links in the logical link, the switch device which receives the forwarded frame forwarding the frame based on the logical link toward less than all of the physical links of the logical link to reduce the number of subsequent switch devices through which the frame is forwarded.
- 10 2. The multistage switch as claimed in Claim 1 wherein the switch device further comprises:
 - 15 a trunk table selector which selects a trunk table for the logical link to reduce the number of ports of the switch device through which to forward the frame.
3. The multistage switch as claimed in Claim 2 wherein the trunk table for the logical link is shared by another logical link.
- 20 4. The multistage switch as claimed in Claim 1 wherein the switch device further comprises:

flow hash logic which indexes a flow hash for the received frame dependent on a destination address and source address included in the received frame.

5. The multistage switch as claimed in Claim 1 wherein the switch device further
5 comprises:
an echo suppression table which includes an entry for each port, the entry selected dependent on the port receiving the frame and the entry ensuring that the frame is not forwarded to any member of the logical link on which it was received.
- 10 6. The multistage switch as claimed in Claim 5 wherein the echo suppression table includes an entry for each external port at which a frame is received.
7. The multistage switch as claimed in Claim 1 wherein at least two of the physical links are coupled to external ports on different switch devices.
8. A multistage switch, to which a logical link couples a destination, the logical link
15 comprising a plurality of physical links, the multistage switch comprising:
a plurality of external ports, each physical link coupled to one of the plurality of external ports; and
a matrix of coupled switch devices, at least two of the physical links coupled to external ports on different switch devices; and
20 means for forwarding a frame received for the destination through at least one of the switch devices to one of the physical links in the logical link based on the logical link toward less than all of the physical links of the logical link to reduce the number of subsequent switch devices through which the frame is forwarded.

9. The multistage switch as claimed in Claim 8 further comprising:
means for selecting a trunk table for the logical link to reduce the number of ports of the switch device through which to forward the frame.
10. The multistage switch as claimed in Claim 9 wherein the trunk table for the
5 logical link is shared by another logical link
11. The multistage switch as claimed in Claim 8 further comprising:
means for indexing a flow hash for the received frame dependent on a destination address and source address included in the received frame.
12. The multistage switch as claimed in Claim 8 further comprising:
10 means for storing an echo suppression vector for each internal port; and
means for selecting a vector dependent on the internal port receiving the frame so the frame is not forwarded to any member of the logical link on which it was received.
13. The multistage switch as claimed in Claim 11 wherein the echo suppression table
15 includes an entry for each external port at which a frame is received.
14. The multistage switch as claimed in Claim 8 wherein at least two of the physical links coupled to external ports on different switch devices.
15. A method for providing a multistage switch, to which a logical link couples a destination through a plurality of physical links comprising the steps of:
20 providing a plurality of external ports, each of the physical links coupled to one of the external ports;

providing a matrix of coupled switch devices, at least two of the physical links coupled to external ports on different switch devices;

forwarding a frame received for the destination to one of the physical links in the logical link through at least one of the switch devices; and

5 in the switch device receiving the forwarded frame, based on the logical link, toward less than all of the plural links of the logical link to reduce the number of subsequent switch devices through which to forward the forwarded frame.

- 10 16. The method as claimed in Claim 15 wherein the trunk table selector includes a pointer to the trunk table and the pointer selects the trunk table to use.
17. The method as claimed in Claim 16 wherein the trunk table for the logical link is shared by another logical link.
18. The method as claimed in Claim 15 further comprising the step of:
 indexing a flow hash for the received frame dependent on a destination
15 address and source address included in the received frame.
19. The method as claimed in Claim 15 further comprising the steps of:
 storing an echo suppression vector for each internal port; and
 selecting a vector dependent on the internal port receiving the frame so
20 the frame is not forwarded to any member of the logical link on which it was received.
20. The method as claimed in Claim 19 wherein the echo suppression table includes an entry for each external port coupled to the switch device.

21. The method as claimed in Claim 15 at least two of the physical links coupled to external ports on different switch devices.
22. A method for forwarding received data for a logical link implemented in a switch device in a multistage switch, the multistage switch comprising a matrix of switch devices, the logical link coupling a destination through a plurality of output ports connected to the multistage switch, comprising the steps of:
- 5 upon determining that the received data is to be forwarded to a member of the logical link, selecting a trunk table associated with the logical link from a plurality of trunk tables, each trunk table including trunk table entries, each trunk table entry including a bit for each internal output port of the switch device;
- 10 computing a forward vector for the received data dependent on a selected trunk table entry for the received data, the forward vector indicating the internal output port through which to forward the received data; and
- forwarding the received data to the selected internal output port.
- 15 23. The method as defined in Claim 22 wherein the forward vector is computed by combining a trunk table entry from the selected trunk table, a physical forward vector and an echo suppression entry from a plurality of echo suppression tables.
24. The method as defined in Claim 23 wherein one of the plurality of echo suppression tables is selected by a trunk selector.
- 20 25. The method as defined in Claim 23 wherein the entry from the selected trunk table is selected by a flow hash dependent on a destination address and a source address included in the received data.

26. The method as defined in Claim 22 wherein switch devices in a row in the matrix of switch devices includes a plurality of fan-in/fan-out devices coupled to output ports, an ingress device having internal input ports connected to the plurality of fan-in/fan-out devices and internal output ports connected to an egress device, an egress device having internal input ports connected to the ingress device and internal output ports connected to the plurality of fan-in/fan-out devices.
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27. The method as defined in Claim 22 wherein one of the plurality of trunk tables is selected by a trunk selector.